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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,955	12/27/2000	Tadayoshi Iijima	P107424-00020	3185

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EXAMINER	
UHLIR, NIKOLAS J	

ART UNIT	PAPER NUMBER
1773	21

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CLO 21

Office Action Summary	Application No.	Applicant(s)	
	09/747,955	IIJIMA, TADAYOSHI	
	Examiner	Art Unit	
	Nikolas J. Uhlir	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,16-18,21-26,28-30,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,16-18,21-26,28-30,33 and 34* is/are rejected.

7)☒ Claim(s) *1,16,17,23,24 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *18*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This office action is in response to the amendment/arguments dated 9/16/03. Currently, claims 1-3, 16-18, 21-26, 28-30, and 33-34 are pending.

Claim Objections

2. Claims 1, 16-17, 23-24, and 29 objected to because of the following informalities: All of these claims have miss-spelled "norbornene" as "norborene." Further, Claim 16 utilizes improper English. I.e. claim 16 states, "a functional film comprising a compressed coating layer of functional fine particles on a support with a compression force of at least 44N/mm^2." Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3, 16-18, 21-26, 28-30 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yukinobu et al. (US5411792).

5. Claim 1 requires a functional film comprising a compressed layer of functional fine particles obtained by compressing a layer containing the functional fine particles that is formed by application onto a support with a compression force of at least 44 N/mm^2, at a temperature below the glass transition temperature of the support, said functional film being selected from the group consisting of a magnetic film, a ferromagnetic film, a dielectric film, a ferroelectric film, an electrochromic film, an electroluminescent film, an insulating film, a light absorbing film, a light selecting absorbing film, a reflecting film, a reflection preventing film, a catalyst film, and a

photocatalyst film, said support being selected from the group consisting of polyethylene terephthalate (PET) film, polyethylene (PE) film, polypropylene (PP) film, polycarbonate (PC) film, acrylic film, and norbornene film, said functional fine particles having a particle diameter of 1.0 microns or less.

6. It is noted that the terms "comprising" and "formed by application onto a support" in claim 1 are open language. Thus, the examiner interprets claim 1 to be open to other layers being present between the support and the layer of functional fine particles. "Formed by application onto a support" does not require the particle layer to be "directly on" or "directly adjacent to" the support.

7. Bearing the above interpretation in mind, the limitations "formed by application onto a support," "at a temperature below the glass transition temperature of the support," are process limitations that do not appear to be further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. While the applicant has established the criticality of the amount of pressure utilized to form the film, the applicant has not established the criticality of the formation at a temperature below the glass transition temperature of the support, and does not require that the particles be formed "directly onto" a support made of the recited materials. Thus, a product that reads on the instant claims could be

formed by applying particles to a intermediate film (other than the claimed support), compressing the particles on the intermediate with the required amount of force, and subsequently applying the compressed film to a support made of one of the materials recited in claim 1.

8. Bearing the above in mind, Yukinobu et al. (hereafter Yukinobu) teaches transparent conductive films, wherein a coating solution containing ultrafine particles (particle size 30nm) of a conductive oxide is formed onto a polyimide film, after which the film is dried and rolled with a steel roller (columns 2 and 3, lines 65-5) to form a transparent conductive film. The film is then applied by roll lamination to a base plate member made of PET (see table 4, columns 13-14 and example 15). It is the examiners position that the PET base plate member is equivalent to applicants claimed support. Yukinobu teaches many examples wherein the film possess a light transmittance values of ~80-85%, as shown in tables 1-5. Thus, at least 15% of incident light on the films of Yukinobu is reflected or absorbed, as it is well known in the art that Transmittance= 1-refllectance-absorbance. Thus, the examiner takes the position that the films of Yukinobu could serve as reflecting or absorbing films. Further, it noted that each of the films of Yukinobu has a surface resistance value of at least 10Ω/□, and many with surface resistivity ~100Ω/□. Thus, as the films of Yukinobu are not purely conducting (surface resistivity= 0Ω/□), the examiner takes the position that the films of Yukinobu could serve as dielectric films, albeit ones that may exhibit very high dielectric constants.

9. Regarding applicants required pressure treatment step. Yukinobu et al. teaches many specific embodiments (examples 15-20) wherein a ITO containing ink is applied to the surface of a polyimide film to form a coating, after which the resulting film was heat treated, a further ITO containing dispersion is coated over the surface and dried, after which the film is subsequently rolled with a steel roller at a linear pressure of 100kgf/cm, 200kgf/cm, and 300kgf/cm. Unfortunately, without the compression length, the pressure utilized by Yukinobu (kgf/cm) cannot be converted to the applicants claimed units (N/mm^2). However, Referring to table 5 of Yukinobu, it is evident that as the roller pressure increases, the surface resistance and light transmission of the film of the film decreases. Thus, the examiner takes the position that the pressure exerted on the functional film is a results effective variable.

10. Therefore it would have been obvious to one of ordinary skill in the art to adjust the amount of pressure applied to the film of Yukinobu in order to obtain a film that exhibits a desired level of surface resistivity and light transmittance.

11. Regarding the limitations of claim 2. Although these limitations are product by process limitations, for the purpose of completeness the examiner notes that Yukinobu teaches applying a solution containing the functional fine particles to the surface of the support and drying the liquid, as shown in examples 15-20.

12. Regarding claim 3, wherein the applicant requires the functional fine particles to be inorganic. Yukinobu teaches utilizing indium tin oxide (ITO) as functional fine particles, which is a known inorganic material (column 13, example 15).

13. The limitations of claim 16 are met as set forth above for claim 1.

14. Claim 17 requires a conductive film comprising a compressed layer of conductive fine particles formed by application onto a support, wherein the compressed layer of conductive fine particles is obtained by compressing a layer containing the conductive particles that "optionally" comprises less than 3.7 parts by volume binder with respect to 100 parts by volume of the conductive fine particles onto the support with a compression force of at least $44N/mm^2$, at a temperature below the glass transition temperature of the support, said support being selected from the group consisting of PET film, PE Film, PP film, PC film, acrylic film, and norbornene film, wherein said conductive fine particles have a particle diameter $\geq$5nm but $\leq$100nm.

15. The limitations of claim 17 are interpreted as set forth above at sections 6 and 7 of this office action. Further, It is important to note that the limitation "optionally a binder resin in an amount of less than 3.7 parts by volume with respect to 100 parts by volume of said conductive fine particles" does not further limit claim 17, as the recited limitation is optional. Thus, a film containing **any** amount binder resin reads on this claim. Thus, the limitations of claim 17 are met as set forth above for claim 1.

16. Regarding claim 18, wherein the applicant requires the layer containing the conductive fine particles is formed by applying a liquid containing the conductive fine particles onto a support and drying the liquid. Although these limitations are product by process limitations as established above, it is noted that Yukinobu teaches the required method in embodiment 15.

17. Regarding claim 21, wherein the applicant requires the compressed layer of conductive fine particles is impregnated with a transparent substance, whereby the film

has a function as a transparent conductive film. Yukinobu in embodiment 15 teaches the required impregnation and function. Thus, this limitation is met.

18. With respect to claim 22, wherein the applicant requires the conductive particles to be selected from inorganic oxides including tin oxide, indium oxide, zinc oxide, cadmium oxide, antimony tin oxide, fluorine doped tin oxide, tin doped indium oxide, and aluminum doped zinc oxide. Yukinobu teaches the utilization of ITO particles (column 2, lines 22-35).

19. Regarding claim 23, wherein the applicant requires essentially the same limitations as claim 17, except that the support is positively recited in the end product. These limitations are met as set forth above for claim 17.

20. With respect to the limitations of claim 24, wherein the applicant requires a transparent conductive film that comprises a compressed layer of conductive fine particles formed by application onto a support, at a temperature below the glass transition temperature of the support, wherein the compressed layer of conductive fine particles is obtained by compressing a layer containing the conductive fine particles and no binder resin onto the support, and then impregnating the layer with a transparent substance after compression, said support being selected from the group consisting of PET film, PE Film, PP film, PC film, acrylic film, and norbornene film, said functional fine particles having a particle diameter $\geq$5nm to $\leq$100nm. These limitations are met as set forth above for claims 1 and 2.

21. The limitations of claims 25-26, 28-30, and 33-34 are met as set forth above for claim 24.

Response to Arguments

22. Applicant's arguments filed 9/16/03 have been fully considered but they are not persuasive. The applicants argue that the Yukinobu reference does not teach all of the claim limitations because the reference does not teach forming a functional film made via the method recited in the claims. The examiner acknowledges that indeed Yukinobu does not explicitly teach a product made by the applicant's process. However, the examiner respectfully reminds the applicant that product claims are predicated by their structure, not the method by which they are made, unless the criticality of the process is established. The only step of the method that has been established to be critical in the instant claims is the pressurizing step. However, Yukinobu teaches compressing a film similar to the applicant's claimed film between two rollers, and clearly shows that as the roller pressure increases, both the resistivity and the transparency of the film decrease (see table 5 of Yukinobu). The examiner maintains that in light of this teaching it would be obvious to one of ordinary skill in the art at the time the invention was made to control the roller pressure to a desired level so as to obtain a film having a desired level of resistivity and transparency. As for the other claimed method limitations, the applicant has not established the criticality of these method steps to obtaining a particular product. Further, the claims are open to the functional fine particles being formed on an intermediate layer, such as the polyimide layer taught by Yukinobu. As Yukinobu teaches the critical compression step as set forth above, and teaches applying the resulting layer to a PET base (equivalent to applicant's claimed base), absent a showing of criticality for the remaining process steps the reference reads on the instant claims.

23. All of the remaining arguments hinge on the argument addressed above. Accordingly, the remaining arguments are also deemed unpersuasive.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

nju

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700